

REMARKS/ARGUMENTS

Claims 1-21 are pending in this application. By this Amendment, Applicant AMENDS claims 1-21.

Claims 1, 4, 5, 9, 10, 14, and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kashiwazaki et al. (U.S. 2002/0041317) (with reference to Jones (WO 02/28650) for a teaching of inherency). Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Cleary et al. (U.S. 6,457,823). Claims 6 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Onishi et al. (U.S. 2001/0015745). Claims 7 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Kasperchik et al. (U.S. 6,536,878). Claims 8 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Lin et al. (U.S. 5,531,818). Claims 16 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Onishi et al. Claims 17 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Kasperchik et al. Claims 18 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Lin et al.

Applicant respectfully traverses the rejections of claims 1-21.

Claim 1 has been amended to recite:

A single pass progressive dot printing ink-jet process comprising the steps of:

applying a first UV curable ink drop to a substrate; and
applying a second UV curable ink drop on to the first UV curable ink drop without intermediate solidification of the first UV curable ink drop, wherein **the first and second UV curable ink drops have a different viscosity, surface tension or curing speed.** (emphasis added)

Applicant's claims 16-18 recite features and method steps that are similar to the features and method steps recited in Applicant's claim 1, including some of the above-emphasized features and method steps.

The Examiner alleged that Kashiwazaki et al. teaches a progressive dot printing ink-jet printing process including the steps of applying a first ink drop to a substrate, and

applying a second drop onto the first drop without intermediate solidification of the first drop. The Examiner further alleged that the first and second ink drops of Kashiwazaki et al. inherently have different viscosities since each color of ink has its own unique viscosity, as taught in paragraphs [0004] and [0027] of Jones.

Applicant respectfully disagrees.

Jones teaches in paragraph [0004] that "In **most** cases, each color has its own unique viscosity" (emphasis added). Thus, Jones does not teach that **ALL** differently colored inks have different viscosities.

The Examiner is reminded that the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); In re Oelrich, 666 F.2d 578, 581-82, (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " In re Robertson, 169 F.3d 743, 745, (Fed. Cir. 1999). See M.P.E.P. § 2112(IV) The Examiner Must Provide Rationale or Evidence Tending to Show Inherency.

Thus, Applicant respectfully submits that Kashiwazaki et al., in view of the alleged teaching of inherency by Jones, does not anticipate Applicant's claimed feature of "the first and second ink drops have a different viscosity, surface tension or curing speed" under 35 U.S.C. § 102(b).

Nevertheless, Applicant has amended claim 1 to recite the features and method steps of a single pass progressive dot printing process including "applying a first UV curable ink drop," "applying a second UV curable ink drop," and "the first and second UV curable ink drops have a different viscosity, surface tension or curing speed." Support for these features is found, for example, on page 1, line 25 and the paragraph

bridging pages 3 and 4 of Applicant's specification.

In contrast, Kashiwazaki et al. teaches aqueous based inks that have very different properties from UV curable inks (see, for example, the Abstract and paragraphs [0070] and [0108] of Kashiwazaki et al.). Furthermore, the viscosity and surface tension of UV curable inks depends on the monomers or oligomers in the ink, not on the color of the pigment in the ink, in which the same monomers and oligomers are typically used for UV ink set (see, for example, the paragraph bridging columns 3 and 4 of Applicant's specification). Accordingly, one of ordinary skill in the art would expect that differently colored UV curable inks would have the same viscosity and surface tension.

Likewise, Jones does not teach or suggest UV curable inks. The commercial inks disclosed in Fig. 5 of Jones are aqueous or solvent based inks, i.e., inks that dry by evaporating the solvent from the solids in the ink. The inks disclosed in Fig. 5 of Jones are not UV curable inks.

Thus, Kashiwazaki et al., either alone, or in view of Jones, clearly fails to teach or suggest the features and method steps of "applying a first UV curable ink drop," "applying a second UV curable ink drop," and "the first and second UV curable ink drops have a different viscosity, surface tension or curing speed," as recited in Applicant's claim 1.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 102(b) as being anticipated by Kashiwazaki et al.

The Examiner relied upon Cleary et al. to allegedly cure the deficiencies of Kashiwazaki et al. However, there is absolutely no teaching or suggestion that the UV curable inks of Cleary et al. could or should have a different viscosity, surface tension or curing speed (see the comments above that UV curable inks typically have the same properties regardless of the color of the ink). Furthermore, Cleary et al. teaches that subsequent ink drops are applied only after the first ink drops are cured (see, for example, the paragraph bridging columns 4 and 5 of Cleary et al., in particular, column

4, lines 60-64). That is, Cleary et al. teaches intermediate solidification of the ink drops. Lastly, Cleary et al. does not teach or suggest a single pass printing process because the carriage 18 of Cleary et al. reciprocates back and forth to sequentially deposit the different colors of ink (see, for example, column 4, lines 1-3 of Cleary et al.). Even in the embodiment shown in Figs. 4A and 4B of Cleary et al., the carriage 18b must reciprocate back (see, for example, column 5, lines 20-24 of Cleary et al.). Consequently, the carriage 18 or 18b of Cleary et al. must make multiple passes in order to deposit all of the UV colored inks.

Thus, Cleary et al. clearly fails to teach or suggest the features and method steps of “applying a first UV curable ink drop,” “applying a second UV curable ink drop,” and “the first and second UV curable ink drops have a different viscosity, surface tension or curing speed,” as recited in Applicant’s claim 1. Thus, Applicant respectfully submits that Cleary et al. fails to cure the deficiencies of Kashiwazaki et al.

Accordingly, Applicant respectfully submits that Kashiwazaki et al. and Cleary et al., applied alone or in combination, fail to teach or suggest the unique combination of features and method steps recited in Applicant’s claim 1.

Claim 16 has been amended to recite:

A single pass progressive dot printing ink-jet process comprising the steps of:

applying a first UV curable ink drop to a substrate; and
applying a second UV curable ink drop on to the first UV curable ink drop without intermediate solidification of the first UV curable ink drop,
wherein subsequent UV curable ink drops are applied sequentially to the combined first and second UV curable ink drops without intermediate solidification of the first and second UV curable ink drops, and
wherein **a viscosity of the first to a last UV curable ink drop applied varies in a graduated manner within a range of from 10 up to 30 mPa·s or a range of from 30 down to 10 mPa·s.**

With further respect to claim 16, the Examiner alleged that Onishi et al. teaches varying the viscosity of first to last drops of ink in a graduated manner. Onishi et al. merely discloses a range of the viscosity of a single ink (see, for example, paragraph [0096] of Onishi et al.). Applicant respectfully submits that Onishi et al. does not

remotely teach or suggest varying the viscosity of different inks in a single printing process.

Thus, the combination of Kashiwazaki et al. and Onishi et al. clearly fails to teach or suggest the features and method steps of “applying a first UV curable ink drop,” “applying a second UV curable ink drop,” and “a viscosity of the first to a last UV curable ink drop applied varies in a graduated manner within a range of from 10 up to 30 mPa·s or a range of from 30 down to 10 mPa·s,” as recited in Applicant’s claim 16.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Onishi et al.

Claim 17 has been amended to recite:

A single pass progressive dot printing ink-jet process comprising the steps of:

applying a first UV curable ink drop to a substrate; and
applying a second UV curable ink drop on to the first UV curable ink drop without intermediate solidification of the first UV curable ink drop, wherein subsequent UV curable ink drops are applied sequentially to the combined first and second UV curable ink drops without intermediate solidification of the first and second UV curable ink drops, and wherein **a surface tension of the first to a last UV curable ink drop applied varies in a graduated manner within a range of from 20 up to 40 dynes/cm or a range of from 40 down to 20 dynes/cm.**

With further respect to claim 17, the Examiner alleged that Kasperchik et al. teaches varying the surface tension of first to last drops of ink in a graduated manner. Kasperchik et al. merely discloses a range of the surface tension of a single ink (see, for example, column 15, lines 13-15 of Kasperchik et al.). Applicant respectfully submits that Kasperchik et al. does not remotely teach or suggest varying the surface tension of different inks in a single printing process.

Thus, the combination of Kashiwazaki et al. and Kasperchik et al. clearly fails to teach or suggest the features and method steps of “applying a first UV curable ink drop,” “applying a second UV curable ink drop,” and “a surface tension of the first to a last UV curable ink drop applied varies in a graduated manner within a range of from 20

up to 40 dynes/cm or a range of from 40 down to 20 dynes/cm," as recited in Applicant's claim 17.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Kasperchik et al.

Claim 18 has been amended to recite:

A single pass progressive dot printing ink-jet process comprising the steps of:

applying a first UV curable ink drop to a substrate; and
applying a second UV curable ink drop on to the first UV curable ink drop without intermediate solidification of the first UV curable ink drop, wherein subsequent UV curable ink drops are applied sequentially to the combined first and second UV curable ink drops without intermediate solidification of the first and second UV curable ink drops, and
wherein a cure speed of the first to a last UV curable ink drop applied varies in a graduated manner within a range of from 20 up to 70 m/min or a range of from 70 down to 20 m/min.

With further respect to claim 18, the Examiner alleged that Lin et al. teaches varying the curing speed. Lin et al. merely discloses that inks may be formulated to have a slow curing speed or a fast curing speed (see, for example, column 12, lines 5-10 of Lin et al.). Lin et al. does not remotely teach or suggest that one ink in a printing process should have a slow curing speed and another ink in the same printing process should have a fast curing speed.

Thus, the combination of Kashiwazaki et al. and Lin et al. clearly fails to teach or suggest the features and method steps of "applying a first UV curable ink drop," "applying a second UV curable ink drop," and "a cure speed of the first to a last UV curable ink drop applied varies in a graduated manner within a range of from 20 up to 70 m/min or a range of from 70 down to 20 m/min," as recited in Applicant's claim 18.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Lin et al.

Claim 9 has been amended to recite:

A set of UV curable ink-jet inks suitable for use in a progressive dot printing ink-jet process **comprising at least four UV curable inks having a different viscosity, surface tension or curing speed.** (emphasis added)

Support for these features is found, for example, in the first paragraph on page 3 and the first full paragraph on page 4 of Applicant's specification.

As indicated above, Jones teaches in paragraph [0004] that "In **most** cases, each color has its own unique viscosity" (emphasis added). Thus, Jones does not teach that **ALL** differently colored inks have different viscosities. Furthermore, Kashiwazaki et al. teaches aqueous based inks that are very different from UV curable inks (see, for example, the Abstract and paragraphs [0070] and [0108] of Kashiwazaki et al.). Likewise, Jones does not teach or suggest UV curable inks. The commercial inks disclosed in Fig. 5 of Jones are aqueous or solvent based inks, i.e., inks that dry by evaporating the solvent. The inks disclosed in Fig. 5 of Jones are not UV curable inks.

Thus, Kashiwazaki et al., either alone or in view of Jones, clearly fails to teach or suggest the features of "A set of UV curable ink-jet inks ... comprising at least four UV curable inks having a different viscosity, surface tension or curing speed," as recited in Applicant's claim 9.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 9 under 35 U.S.C. § 102(b) as being anticipated by Kashiwazaki et al.

For at least the same reasons indicated above with respect to claims 9 and 16-18, Applicant respectfully submits that the combination of Kashiwazaki et al. and Onishi et al. clearly fails to teach or suggest all of the features and method steps recited in Applicant's claim 19, that the combination of Kashiwazaki et al. and Kasperchik et al. clearly fails to teach or suggest all of the features and method steps recited in Applicant's claim 20, and that the combination of Kashiwazaki et al. and Lin et al. clearly fails to teach or suggest all of the features and method steps recited in Applicant's claim 21.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of

the rejection of claims 19, 20, and 21 under 35 U.S.C. § 103(a) as being unpatentable over Kashiwazaki et al. in view of Onishi et al., Kashiwazaki et al. in view of Kasperchik et al., and Kashiwazaki et al. in view of Lin et al., respectively.

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1, 9, and 16-21 are allowable. Claims 2-8 and 10-15 depend upon claims 1 and 9, and are therefore allowable for at least the reasons that claims 1 and 9 are allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

To the extent necessary, Applicant petitions the Commissioner for a ONE-month extension of time, extending to January 12, 2009 (January 11, 2009 falls on a Sunday), the period for response to the Office Action dated September 11, 2008.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Dated: January 12, 2009

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